EXHIBIT D

Angelo planning group

LAND USE PLANNING • TRANSPORTATION PLANNING • PROJECT MANAGEMENT

Memorandum

Date:	December 19, 2013
To:	South Cooper Mountain Technical Advisory Committee
From:	Joe Dills and Becky Hewitt, Angelo Planning Group
Cc:	South Cooper Mountain Citizens Advisory Committee
Re:	Concept Plan Scenarios for South Cooper Mountain

Introduction

Purpose

The purpose of this memorandum is to briefly describe two Concept Plan Scenarios for the South Cooper Mountain planning area. As noted below, they have been prepared through the evaluation and refinement of the three original scenarios discussed in September.

Process and Schedule

The scenario phase of the South Cooper Mountain planning process is the prelude to preparing a more detailed concept plan for the entire 2,300-acre planning area and community plans for the South Cooper Mountain Annexation Area and North Cooper Mountain. The scenario phase is intended to create an overall vision, evaluate alternatives, and then select/create a preferred scenario, which will be the basis for the concept plan. There are five steps in this phase, summarized below:[1]

Step 1 – Develop 2-3 mapped scenarios (complete)

Step 2 – Scenario analysis (complete)

Step 3 – Scenario refinement (November – January 2014) – ***we are here***

Step 4 – Public review/Open House (February)

Step 5 – Select/create preferred scenario (March - April)

The concept plan and community plans will be discussed by the project committees in May, 2013. Adoption by the City is scheduled for the winter of 2014/15.

[1] Background information on the project and process, including the "Scenarios for Future Growth" report and summaries of advisory committee meetings, is available from the project's webpage: www.beavertonoregon.gov/southcooperplan.

Evolution of the Scenarios

The three scenarios presented to the project's advisory committees in September 2013 (identified as scenarios 1, 2, and 3) in the report entitled "Scenarios for Future Growth" (Sept. 12, 2013) were modified slightly based on feedback from those committees, retaining the same names and overall themes. In addition to the three original scenarios, several potential variations on the transportation frameworks were suggested during committee meetings and were included for evaluation of their feasibility and transportation impacts.

Scenario evaluations were prepared for transportation, water, sanitary sewer, and storm water management; land use and energy; and parks, trails, and open spaces.[2] Those evaluations were reviewed by the City and discussed in work sessions with City staff. Coordination meetings were also held with Clean Water Services, Washington County, the City of Tigard, City of Hillsboro, Tualatin Valley Water District, Tri-Met, Tualatin Hills Park and Recreation District, and the Beaverton and Hillsboro School Districts. Based on the evaluations and coordination meetings, the three scenarios have been refined to create the two scenarios presented in this memo. They are titled Concept Plan Scenario A and Concept Plan Scenario B.

The refined concept plan scenarios combine the elements of the three original scenarios that performed the best in the scenario evaluation, using the project's guiding principles as the overarching evaluation criteria. Parallel with the scenario refinement, initial work has occurred on the infrastructure funding component of the project. Project costs and funding strategies will continue to be developed so that they inform the refined scenarios and the crafting of the preferred scenario.

Overview of Refined Scenarios and Framework Plans

The following maps have been prepared and are included in this memorandum:

- Concept Plan Scenario A
- Concept Plan Scenario B
- Transportation Framework A
- Transportation Framework B
- Bicycle and Pedestrian Framework A
- Bicycle and Pedestrian Framework B
- Parks Framework
- Schools Framework
- Natural Resource Framework

[2] The technical memoranda for the scenario evaluation are available from the project's webpage: www.beavertonoregon.gov/southcooperplan.

This memo is organized by topic: land use, transportation, natural resources, and infrastructure. In each topic, the common elements and scenario differences are described.

Land Use

Common Elements

Near Term and Future Land Use

Feedback from the public, project advisory committees, and scenario evaluation leading up to this point has reinforced the importance of clarifying what elements of the plan should be defined and planned for the "near" term, i.e. in the next 20 years, and what elements are more appropriately defined and planned for the very long term future. Actual timing of development will be dependent on infrastructure availability and property owner initiative.

Near Term

As used in this memo and on the maps, the phrase "near term" refers to land uses and development that are likely to occur within the next 20 years. The South Cooper Mountain Annexation Area (SCMAA) and North Cooper Mountain (NCM) are both within the Urban Growth Boundary (UGB). The SCMAA was annexed to the City of Beaverton in January 2013 and is intended to be developed in the near term. As discussed later in this memo, infill development within the portion of NCM that can be served by sanitary sewer service within the next 20 years is also characterized as near term, although the timing will depend on property owner initiative.

Future

As used here, "future" refers to land uses and development that are uncertain and unlikely to occur within the next 20 years. The timeline for development in future areas is less certain, and will likely span several decades. All of the Urban Reserve Area is considered a future area because urban development cannot occur until Metro, in partnership with the region and subject to state review, expands the UGB to include this area. The southern portion of North Cooper Mountain is also characterized as future because providing sanitary sewers, which will be needed at some point in the future to replace failing septic tanks, is not feasible in the near term.[3]

For the reasons described above, and to help provide a clear temporal element to the concept plan, land uses are characterized as Near Term (0-20 year) and Future on Concept Plan Scenarios A and B.

[3] The future sanitary sewer system for this area will be a gravity system that runs south to a new pump station near Tile Flat Road. It will likely be property owner initiated based on the need to replace failing septic systems.

Development Types

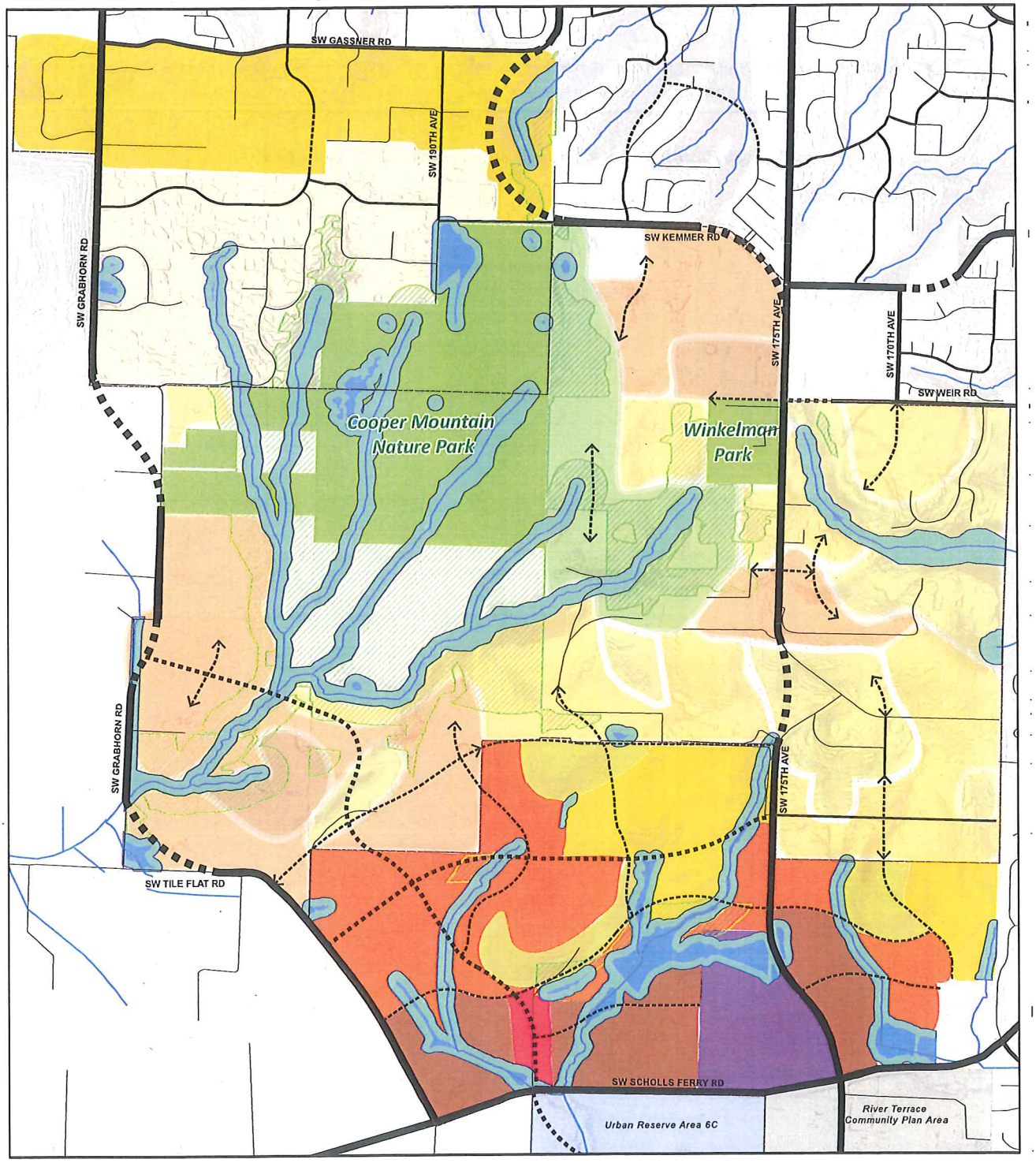
The scenarios depict conceptual lands uses using "development types", described below.

Map Symbol		
	Urban Neighborhood	Primarily made up of apartments/condos and townhomes, with some small-lot single family homes.
	Future Urban Neighborhood	
	Compact Neighborhood	A mix of single family homes on relatively small lots (around 4,000 square feet) and townhomes.
	Future Compact Neighborhood	
	Single Family Neighborhood	Includes single family homes on lots ranging from 5,000 to about 7,000 square feet.
	Future Single Family Neighborhood	
	Hillside Neighborhood	Made up of large-lot single family homes (roughly 10,000 square feet per home) to account for challenging slopes and provide opportunities for "executive"-style housing.[4]
	Future Hillside Neighborhood	
	Future Low Density Neighborhood	Large-lot single family homes (lots around 10,000 square feet).
	Future Very Low Density Single Family Residential	Single family homes on lots around one acre, similar to the existing development pattern in North Cooper Mountain.[4]
	Future Cluster Neighborhood	Primarily applied in places with high quality upland habitat; houses are grouped together on more buildable portions of a property and can share views of and access to nearby natural areas. Lot sizes are assumed to include a range of sizes from relatively small lots (around 4,000 feet) to larger lots (around 10,000 square feet) to account for topography and provide transition to resource areas.
	Main Street Commercial	Street-oriented ground floor retail, with potential for office and/or residential units on the second floor of some buildings. All of the commercial uses are intended to serve day-to-day needs of residents.
	Future Neighborhood Commercial	

[4] Areas identified for 10,000 square foot or larger lots may provide opportunities for "executive" style housing

Beaverton South Cooper Mountain

South Cooper Mountain Concept & Community Plans



Concept Plan Scenario A

- Urban Growth Boundary
- Streams
- Open Water/Wetland/Probable Wetland
- Riparian & Wetland Buffers
- Class A Upland Habitat
- Planned High School Site
- Study Area Tax Lots

Transportation Framework*

- Arterial
- Collector
- Neighborhood Route

Near Term (0-20 Year) Land Use

- Hillside Neighborhood
- Single Family Neighborhood
- Compact Neighborhood
- Urban Neighborhood
- Main Street Commercial

Future Land Use

- Future Very Low Density Single Family Neighborhood
- Future Hillside Neighborhood
- Future Cluster Neighborhood
- Future Single Family Neighborhood
- Future Compact Neighborhood
- Future Urban Neighborhood

Date: 12/19/2013

** See also Transportation Framework maps. Realignments and new roads shown in dashed lines. All alignments are conceptual.*

Prepared By: Angelo Planning Group

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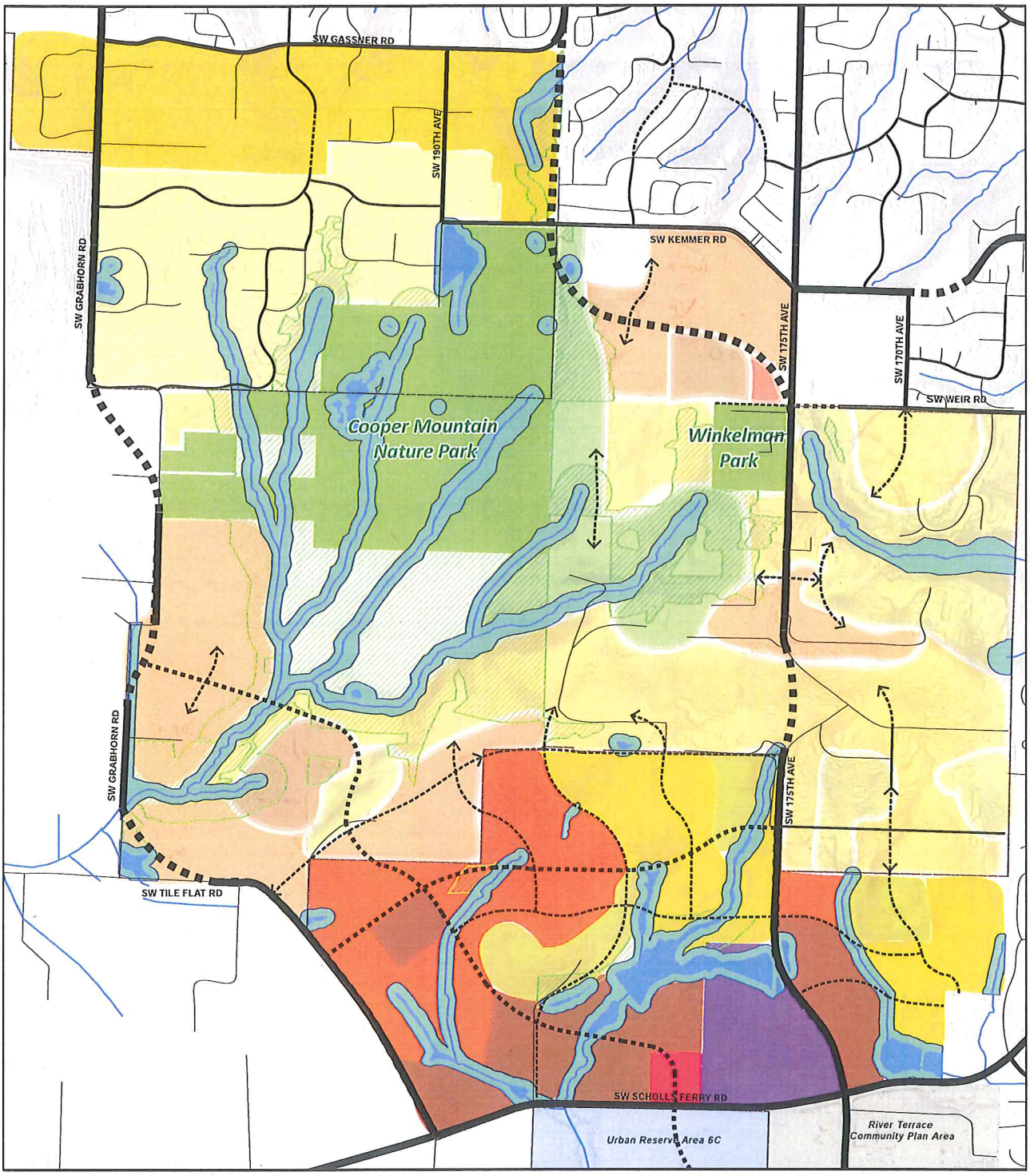
Beaverton South Cooper Mountain

South Cooper Mountain Concept & Community Plans



Concept Plan Scenario B

- Urban Growth Boundary
- Streams
- Open Water/Wetland/Probable Wetland
- Riparian & Wetland Buffers
- Class A Upland Habitat
- Planned High School Site
- Study Area Tax Lots

Transportation Framework*

- Arterial
- Collector
- Neighborhood Route

Near Term (0-20 Year) Land Use

- Hillside Neighborhood
- Single Family Neighborhood
- Compact Neighborhood
- Urban Neighborhood
- Main Street Commercial

Future Land Use

- Future Low Density Neighborhood
- Future Hillside Neighborhood
- Future Cluster Neighborhood
- Future Single Family Neighborhood
- Future Compact Neighborhood
- Future Urban Neighborhood
- Future Neighborhood Commercial

*See also Transportation Framework maps. Realignments and new roads shown in dashed lines. All alignments are conceptual.

Date: 12/19/2013

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Housing Capacity and Density

Overall, the estimated housing capacity and density are very similar for the two scenarios, as shown in Table 1 below. The total number of new dwelling units is 7,830 for Scenario A and 7,930 for Scenario B. For comparison, the total new dwelling units in the initial scenarios were: 7,130 for Scenario 1; 8,470 in Scenario 2; and 9,330 in Scenario 3. The capacities for the refined scenarios are in the middle range of the spectrum relative to the initial scenarios for several reasons, including:

- more attention to slope areas in the East Hills, with lower density assumptions in those areas;
- lower density assumptions in the URA Lowlands to enable density transitions from the SCMAA towards The Creeks; and
- refined assumptions related to infill in NCM, reducing estimates of realistic development capacity in that area (see pages 12 and 15 for additional explanation of current assumptions in NCM).

Table 1: Housing Capacity and Density by Landscape Area – New Dwellings

Landscape Area	Scenario A Capacity (Housing Units)	Scenario A Net Density	Scenario B Capacity (Housing Units)	Scenario B Net Density
SCM Annexation Area	3,440	14.4	3,540	14.7
North Cooper Mountain	460	5.3	570	6.0
Hilltop	1,150	15.1	1,090	14.7
East Hills	950	8.0	930	7.7
URA Lowlands	1,180	12.4	1,230	13.0
Grabhorn Meadow	650	15.2	650	15.2
The Creeks	100	9.0	110	9.2
Total	**7,930**	**11.6**	**8,120**	**12.1**

As with the residential densities and capacities, the housing mix for the concept plan area as a whole is nearly identical between the two scenarios, as shown in Figure 3. The same is true within the SCMAA, as shown in Figure 4. This result is expected due to the common housing type mixes assumed in the development types and the similarities in the land use patterns, as described below.

Figure 3: Overall Scenario Housing Mix by Scenario – New Dwellings

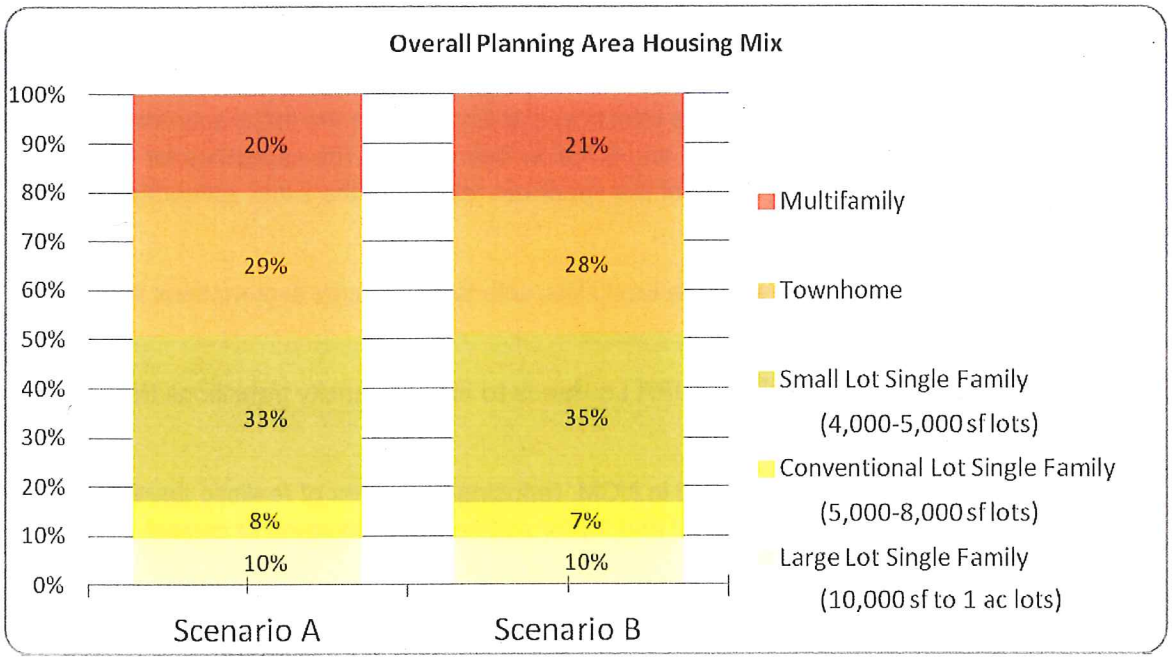
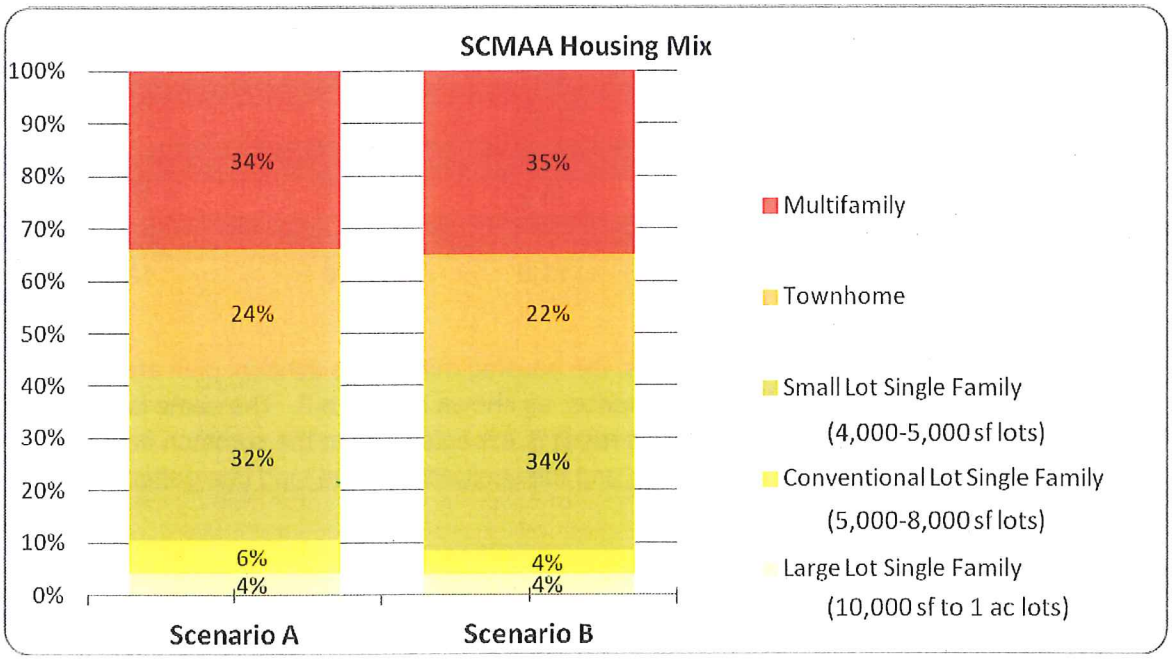


Figure 4: SCMAA Housing Mix by Scenario



Land Use Patterns

The land use patterns share many similar elements in the two scenarios. This is an expected result from the process of selecting the best performing elements from the initial scenarios, incorporating policy directives and state law, and being responsive to preferences expressed by project participants. The team discussed whether to compel the creation of very different scenarios for this refined set, and chose not to because it would not be reflective of the input received during the process and the outcomes of the scenario evaluation.

The patterns of land use are described below by landscape area.

SCMAA

The scenarios focus the highest density of housing (the Urban Neighborhood designation) in the southern portion of the SCMAA, close to Scholls Ferry Road and 175th Avenue, with density generally decreasing northward. This pattern implements a theme expressed at the Visioning Workshop. It also will help the area support future transit service, which would likely extend from the Murray Scholls Town Center along Scholls Ferry Road to the south end of the SCMAA (see page 26 for more on future transit).

Both scenarios locate a Main Street Commercial area at the intersection of Scholls Ferry Road and a future collector road, and running north along the new collector road. The locations provide visibility and access needed for commercial uses, and accessibility from adjacent neighborhoods. One of the findings from the scenario evaluation for transportation was that a future connection to Roy Rogers Road is beneficial to the overall transportation network. This was also considered in locating the Main Streets in each scenario. The Main Street along Scholls Ferry Road will complement the commercial area being planned to the south in River Terrace.

Both scenarios are intended to create walkable neighborhoods. Conceptual neighborhood boundaries have been drawn and are illustrated on the framework plans.[5] Each neighborhood is ½ mile or less across, representing a walking distance of about 5 minutes from center of the neighborhood to its edge. Each neighborhood will have a variety of housing types; this will be further defined in the concept plan and community plan phases of the project. These neighborhoods are planned to include parks and schools. They are not shown as site-specific land uses on the scenarios, reflecting the intent to provide flexibility in where they are placed, consistent with location criteria. Please see Civic Uses discussion on page 26 of this memo.

[5] Please see the Transportation, Bicycle-Pedestrian, Park and School Framework Plans.

North Cooper Mountain

The two scenarios both designate the northern portion of North Cooper Mountain as Single Family Neighborhood (near term, 0-20 years). The reasons are:

- the land is within the UGB, so under Metro Title 11[6] the land is required to be planned for urban development;
- there are approximately 69 acres of buildable land in this area;[7]
- existing development (approximately 100 homes on 1+ acre lots) is served by septic systems which will need to be replaced as those systems fail in the future. Over time, the area will be connected to a public sanitary sewer system;
- property owners will be better positioned to pay for new sewers if the land is zoned to allow additional homes; and,
- existing sewer lines are adjacent in the urbanized area north of Gassner Road, so it is feasible to connect properties in the northern portion of NCM to the public sewer system with new gravity lines.

Taken together, these factors indicate that the northern portion of NCM has capacity for additional homes and infrastructure is available. The Metro requirements that were in place when this area was initially brought into the UGB in 2002 called for a variety of new housing averaging 10 dwellings per net developable acre. This requirement has since changed, and Metro staff have indicated there is flexibility regarding density requirements for NCM when considering the area as part of the larger South Cooper Mountain concept planning area. The proposed Single Family Neighborhood designation represents a balancing of all the factors discussed above. It would provide for an average of 6,700 square foot lots (6.5 dwellings per net developable acre) for new development.

For the purpose of long range planning, some infill potential is assumed in this part of NCM through the partitioning of lots that are currently developed. Roughly half of the land identified as "developed" in the Buildable Lands Inventory in this area consists of yard areas that do not contain structures, driveways or other physical commitments. These undeveloped areas could theoretically be available for partitioned lots and new homes after the provision of public sanitary sewers. Due to lot configuration, utility lines, owner preferences, and other factors, it is assumed that only about half of the "available" land would be partitioned for infill.

Grabhorn Meadow

Both scenarios designate Grabhorn Meadow as Future Compact Neighborhood. The scenario evaluation showed that this area will likely be the last to develop in the entire study area. Sewer service will require a new pump station near Tile Flat Road and a force main connecting into the

[6] Title 11 is a section of the Metro Code that regulates planning for future urban areas.

[7] See South Cooper Mountain Buildable Land Inventory, available on the project webpage, for an explanation of how buildable land was identified.

system to the south. Water must be provided via a new water line loop extending from the Hilltop area through North Cooper Mountain and looping south to connect back to the water system in the Lowlands area. Given these infrastructure challenges and location within the URA, it is reasonable to expect that development of Grabhorn Meadow will occur in future decades. The Future Compact Neighborhood designation will provide roughly 15 units per net acre on average, a density that Metro required for recently added new urban areas, and the ability to design lower density transitions adjacent to the Creeks area on the east, and the rural reserve area to the west of Grabhorn Road.

The Creeks

As discussed throughout the project, the Creeks area is a priority area for natural resource protection and consolidation of open space on the mountain. To reflect this priority, which was reinforced during the scenario evaluation and coordination meetings, very little development is shown in The Creeks area in either scenario.

There are two, large, interconnected meadows just south and east of the Nature Park that are currently farmed. A tributary to McKernan Creek runs between the two meadows, but it does not create a significant barrier between them. This land has high habitat value due to the adjacent resources, but is relatively free of slopes and other physical constraints, aside from the relatively small stream corridor. The scenario evaluation showed that sewer infrastructure to service the western meadow would need to connect to the west, across several other tributaries and through Grabhorn Meadow, to the future Tile Flat pump station. The scenario evaluation also showed that sewer infrastructure to service the eastern meadow can be routed around McKernan Creek to connect to lines headed into the SCMAA, and thus has less impact to riparian corridors. Based on the total impact to the natural resources in The Creeks area that would result from allowing development in the western meadow, the proposed concept for this meadow in both scenarios is to plan for transfer of density into the Lowlands area. The amount of Future Compact Neighborhood shown in the Lowland areas reflects the ultimate density that would be allowed there, after transferring density from the western meadow.[8] The scenarios show different concepts for the eastern meadow, which are discussed below in the Scenario Differences section.

Hilltop

The pattern of land use in the Hilltop area is different in the two scenarios due to the two alternatives suggested for connecting 175th Avenue and 185th Avenue over the long term. Those differences are discussed below in the Scenario Differences section.

Similarities between the two land use patterns include:

[8] The western meadow measures roughly 16 acres; at a gross density of roughly 7 units per acre, as assumed for other parts of The Creeks, this would translate to approximately 112 units that would be transferred to the URA Lowlands. As an incentive option, a ratio of 1.5 units allowed could be applied to the density transfer, e.g. 112 units X 1.5 = 168 units.

- Overall, both are planned at about 15 units per acre, consistent with Metro's 2011 UGB expansion requirements The Urban Neighborhood area is located close to Winkelman Park, so that future apartment and condominium residents are close to active open space.

- There is a general transition from higher to lower density in the Hilltop. The Future Single Family Neighborhood to the west of Winkelman Park is intended to provide for new housing in this unconstrained area while transitioning down in density near the two tributaries to McKernan Creek.,

- The area adjacent to Cooper Mountain Nature Park is designated Future Cluster Neighborhood, to create a transition of density and open space between the park and development in the East Hills.

The East Hills area is fairly consistent between the two scenarios. The common characteristics include:

- South of Weir Road and east of Winkelman Park, the designations of Future Single Family Neighborhood (in flatter areas) and Future Hillside Neighborhood (in steeper areas) reflect the need to plan carefully in this constrained and potentially geologically unstable area.

- The area on either side of 175th Avenue north of Outlook Lane and Siler Ridge Lane (just north of the "kink") is the least sloped and least wooded area in the East Hills. It is designated Compact Neighborhood on both scenarios because it is an area capable of accommodating smaller lots and townhomes, providing a node of medium density housing within the surrounding lower density areas.

- The southern portion of the East Hills is a mix of Future Single Family Neighborhood (areas generally under 15% slope) and Future Hillside Neighborhood (steeper and more wooded areas), reflecting the variety of slopes, tree groves, and existing development.

The Lowlands

The Lowlands area is very consistent between the two scenarios. The Lowlands are generally unconstrained, relatively easy to serve with infrastructure, and provide an opportunity for Metro-compliant densities. The key land use characteristics of this area include:

- The area is logical extension of the land use pattern of the South Cooper Mountain Annexation Area; future neighborhoods abutting the SCMAA to the north and northwest extend the Compact Neighborhood and Single Family Neighborhood designations found within the UGB.

- There is a "shelf" of sloped land that separates the Annexation Area terrace from the lower terrace of the Lowlands. It is designated Future Hillside Neighborhood due to the steep slopes.

- A node of Future Urban Development has been located on the lower terrace, to the west of the above-referenced slope. This flat area is appropriate for denser development and helps the plan avoid placing higher density adjacent to Tile Flat Road and the agricultural area in the Rural Reserves to the west – a viewpoint expressed in the Visioning Workshop. The Future Urban designation increases the overall density in the Lowlands, which aids the plan in satisfying Metro expectations for efficient use of new urban land.

Scenario Differences

The differences between the scenarios in terms of their land use patterns are summarized, in brief, below:

- **Main Street** – Scenario A places the Main Street north of Vandermost Road. Scenario B places the Main Street adjacent to the high school site north of a new intersection that would be located between 175th Avenue and Tile Flat Road. Both locations would, over time, be served by a Collector road connecting Scholls Ferry Road and South Cooper Mountain to Roy Rogers Road[9] and the new communities in Urban Reserve Area 6C and River Terrace. The Main Street location in Scenario A will need to address the existing tributary and farm pond at that location; either modifying them or potentially incorporating them as a gateway amenity. The Main Street location in Scenario B will provide commercial services adjacent to the High School.

- **North Cooper Mountain, southern area** – Scenario A shows the Future Very Low Density Single Family Neighborhood designation in the southern area of NCM. The concept here is that the area would be planned to remain the same 1-acre residential pattern over the long term future. When sewers are eventually needed, they would be paid for by property owners without the benefit of infill or redevelopment of existing large lots. Scenario B shows the Future Low Density Neighborhood designation in this area. This scenario envisions that when sewers eventually come into the area, there would also be zoning in place that allows for a limited amount of infill or redevelopment (at about 4 dwellings per acre – less than that envisioned for the area closer to Gassner Road) that helps property owners pay for the infrastructure.

- **Hilltop Neighborhood Center** – In Scenario B, a three- to four-acre neighborhood center is placed at the new intersection formed by the extension of Weir Road and the connection of 175th to 185th Avenues. The neighborhood center will provide neighborhood scale commercial services (e.g. coffee shop, day care) for the Hilltop and surrounding areas. Feedback received from developer representatives recommends that the neighborhood commercial site be planned for a highly visible and accessible location to be successful.

[9] Preliminarily, the collector road is connected to Roy Rogers Road at Bull Mountain Road.

- **McKernan Meadow** – The easternmost of the two small meadows described on page 13, located between the eastern tributaries of McKernan Creek, is designated Upland Habitat (with transferred density) in Scenario A and Future Cluster Neighborhood in Scenario B. As described previously, this land is farmed and relatively accessible, but has high habitat values due to the adjacent natural resources. Scenario A's designation prioritizes natural resources and habitat connectivity. Scenario B's designation provides for cluster development similar to adjacent lands to the east.

- **East Hills Hillside housing** – The details of the areas designated for Future Hillside Neighborhoods within the East Hills vary between the two scenarios. The areas shown are conceptual and will be further refined for the preferred scenario and concept plan. Implementing hillside protection standards and policies will shape exactly where lower densities are designated within this area.

- **Hillside housing in the north Annexation Area** – City Council has expressed a need to provide opportunities for a full range of housing types in the SCMAA. To accommodate the need for larger single family lots in the SCMAA and to account for some knolls with challenging terrain, the Hillside Neighborhood designation has been utilized in several parts of the SCMAA. Two different placements are provided in the northern portion of the SCMAA, north of the collector road. Property owner and developer feedback will provide guidance as to which of these locations is more appropriate for a lower density housing type.

Transportation

Roadway Framework

The scenarios identify potential realignments and improvements to existing roads within the planning area as well as new roadway networks to serve future development. The scenarios identify arterials, collectors, and neighborhood routes; these road classifications are described briefly below:

- Arterials provide connections both to the planning area from other parts of the region and through the planning area; they typically have limited driveways and local road connections, and place a priority on through traffic.
- Collectors provide connections at a more local scale and link to arterial roads and other collectors.
- Neighborhood routes provide neighborhood-scale through-streets and connections between collector roads and neighborhoods.

Future local roads will be designed by developers in accordance with city standards and are not shown. The local roads will complete the network and serve an important role in creating a well-connected walkable community.

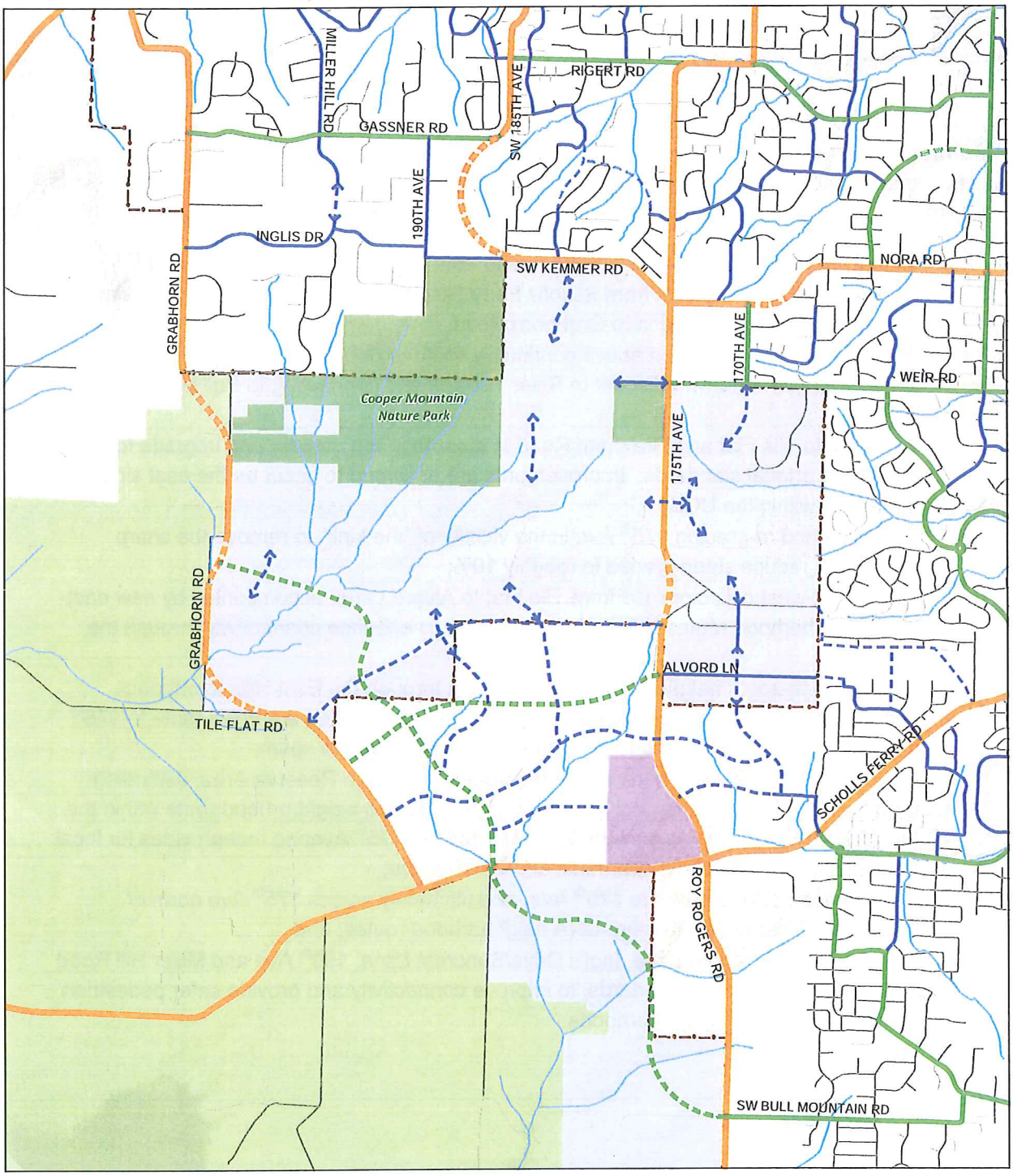
Common Elements

Both scenarios include many of the same connections, although for many of the connections the assumed route or location differs between the scenarios. Common components include:

- an arterial road connection from 175th Ave to 185th Ave within the planning area;
- a collector road connection from Scholls Ferry Road through the SCMAA, continuing through the URA and tying in to Grabhorn Road;
- the collector road described above continuing south of Scholls Ferry Road through Urban Reserve Area 6C adjacent to River Terrace and connecting to Bull Mountain Road;
- upgrades to Tile Flat and Grabhorn Road to smooth sharp corners and upgrade to urban three-lane arterial standards. Improvements are assumed to occur on the east side of the roads, within the UGB;
- rebuilding and re-grading 175th Ave in the vicinity of "the kink" to remove the sharp corner and reduce steep grades to roughly 10%;
- a new east-west collector road from Tile Flat to Alvord Lane, accompanied by new east-west neighborhood routes to the north and south to enhance connectivity through the area;
- a future north-south neighborhood route winding through the East Hills to enhance connectivity through that part of the planning area, and provide a parallel route to 175th running from 170th Avenue on the north to the SCMAA on the south;
- a future north-south neighborhood route through the Urban Reserve Area, extending from Kemmer Road across McKernan Creek, linking to a neighborhood route within the SCMAA. This will provide a second parallel route to 175th Avenue that provides for local trips and reduces turning movements on 175th Avenue;
- the extension of Weir Road to 175th Ave, and ultimately across 175th Ave north of Winkelman Park to tie into other URA neighborhood routes; and
- improvements to Alvord Lane, Inglis Drive/Suncrest Lane, 190th Ave and Miller Hill Road to Neighborhood Route standards, to improve connectivity and provide safer pedestrian connections through neighborhoods.

Beaverton South Cooper Mountain

South Cooper Mountain Concept & Community Plans



Transportation Framework: Scenario A

- Urban Growth Boundary
- Rural Reserve
- Urban Reserve
- Existing Parks
- Planned High School Site
- Streams

Proposed Functional Classification*

- Arterial
- Collector
- Neighborhood Route
- Local
- Private

Date: 12/19/2013

** Realignments and new roads are shown in dahsed lines. New roads outside study area boundary are based on Washington County's Transportation System Plan. All new road alignments are conceptual.*

Prepared By: Angelo Planning Group
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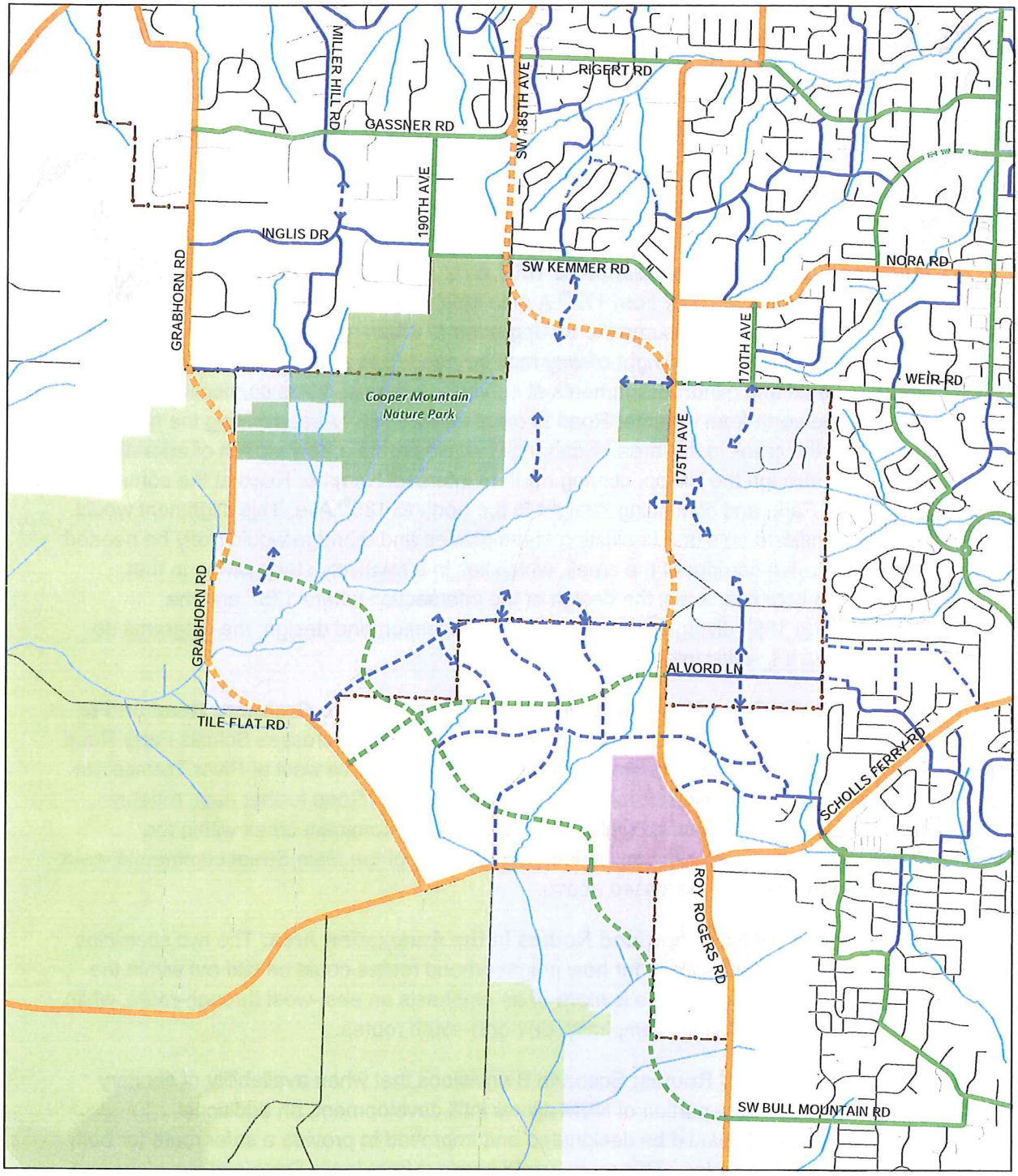
Beaverton South Cooper Mountain

South Cooper Mountain Concept & Community Plans



Transportation Framework: Scenario B

- Urban Growth Boundary
- Rural Reserve
- Urban Reserve
- Existing Parks
- Planned High School Site
- Streams

Proposed Functional Classification*

- Arterial
- Collector
- Neighborhood Route
- Local
- Private

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Scenario Differences

The key differences between the roadway frameworks for the scenarios are summarized below.

- **Alignment of the new connection to 185th Ave**: Scenario A utilizes the existing Kemmer Road right-of-way from 175th Ave to Mayberry Place at the corner of the Nature Park (Kemmer Road is assumed to be upgraded to urban arterial standards for this segment. Some additional right-of-way may be needed to accommodate these improvements and minor realignments at curves). A new at-grade connection would curve to the north from Kemmer Road to meet up with 185th Ave, avoiding the riparian corridor of the creek in this area. Scenario B would create a new stretch of arterial road from 175th through the Hilltop, curving north to intersect Kemmer Road at the corner of the Nature Park, and continuing straight to the north to 185th Ave. This alignment would require significant cuts due to existing steep grades and a bridge would likely be needed over the riparian corridor of the creek, which lies in a relatively steep ravine in that location. In both scenarios, the design of the intersection where 175th and the connection to 185th diverge would need careful attention and design; the diagrams do not presume a specific intersection design.

- **Alignment of a Collector Road from Scholls Ferry Road to Grabhorn Road and to Bull Mountain Road**: In Scenario A, this proposed collector crosses Scholls Ferry Road as far west as possible while staying within the urban reserve west of River Terrace. In Scenario B, the new collector road crosses Scholls Ferry Road further east, roughly halfway between the planned high school site and the dominant creek within the Annexation Area. This has implications for the siting of the Main Street commercial area within the SCMAA, as discussed above.

- **Configuration of Neighborhood Routes in the Annexation Area:** The two scenarios offer slightly different options for how neighborhood routes could be laid out within the SCMAA. In Scenario A, there is more of an emphasis on east-west through-route, while in Scenario B there is more emphasis on north-south routes.

- **NCM Neighborhood Routes:** Scenario B envisions that when availability of sanitary sewer in the southern portion of NCM allows infill development, an additional neighborhood route would be designated and improved to provide a safer route for both pedestrians and vehicles. This route would connect from Inglis Drive and the extension of Miller Hill Road to Grabhorn Road via Whispering Fir Drive, Corrine Street, and Stonecreek Drive (see Figure 6: Transportation Framework - Scenario B), all of which are currently local roads.

Bicycle & Pedestrian Framework

Common Elements

The majority of the proposed bicycle and pedestrian framework for the planning area is common to both scenarios.

While the ultimate trail width and design will be determined at the time it is designed and built, the following trail typology is used for planning purposes:

- **Regional Multi-Use Trails:** Regional trails provide connections between communities and to regionally significant features and destinations. These are assumed to be paved paths that accommodate both pedestrians (including those with disabilities) and bicyclists. They may follow roads, separated from the roadway by a landscaped area, or be located in their own separate right-of-way. Trail width may range from 10 to 14 feet (with 2 foot gravel shoulders wherever feasible) depending on context and surrounding constraints.

- **Community Multi-Use Trails:** These trails link important land uses and areas of interest with one another and connect users to the regional trail system. They are assumed to be paved paths that accommodate both pedestrians (including those with disabilities) and bicyclists, recognizing that topographic constraints may be challenging. Within the planning area, it is assumed that community multi-use trails along roadways will be separated by a landscaped area. Trail width may be slightly less than for regional trails, with eight to 10 feet of paved width and one- to two-foot gravel shoulders.

- **Pedestrian-Only Nature Trails:** These are assumed to be soft-surface trails that are for pedestrians only. They provide connections through and along natural areas, including links to the Cooper Mountain Nature Park trail system. Widths may range from three to eight feet.

The major components of the proposed bicycle and pedestrian framework are summarized below.

- **On-Street Bicycle & Pedestrian Facilities**: All new and improved roadways within the planning area are planned to have sidewalks. In addition, all new arterial and collector roadways are planned to have bike lanes, as identified in the City of Beaverton and Washington County TSPs. In some locations within the SCMAA, additional sidewalk width or a more protective bike lane treatment may ultimately be specified as part of the Community Plan in order to provide a comfortable walking and cycling experience.

- **Cooper Mountain Regional Trail:** This trail will ultimately connect the Westside Trail to the planned Reedville Trail (formerly called the BN Powerline Trail) as well as linking to the Cooper Mountain Nature Park.

- **Cooper Mountain Loop Trails**: This system of community multi-use trails will follow major roadways within the planning area, running along the "inside" of the roads (i.e. the east side of Grabhorn & Tile Flat, the north side of Scholls Ferry, and the west side of 175th). These trails will link to one another and to the Cooper Mountain Regional Trail and the River Terrace trail system. A spur connection into the heart of the Annexation Area along the northern side of the central stream and wetland complex will provide a connection to the Main Street and/or high density residential uses within the SCMAA.

- **McKernan Creek Trail:** This nature trail will run along the outer edge of the McKernan Creek riparian corridor, providing a link from Winkelman Park to Grabhorn Road.

- **Ridgeline Trail and other Nature Park connections:** A system of nature trails will provide links to the Cooper Mountain Nature Park trail system from Winkelman Park, the McKernan Creek Trail, and the South Cooper Loop Trail.

- **Summer Creek Trail:** This trail follows the riparian corridor of Summer Creek, linking to Winkelman Park and the Cooper Mountain Nature Park trail system and the McKernan Creek Trail. A potential connection to the east near the southern tributary of Summer Creek and linking to local streets that connect to the Westside Trail is also shown.

- **Annexation Area Stream Corridor Trails:** A system of nature trails will run along the outer edges of several stream reaches within the SCMAA, providing a recreational amenity and safe, pleasant pedestrian connections. East of 175th Avenue, a connection to the River Terrace Trail south of Scholls Ferry Road crosses through the wetland area at an existing driveway and follows the riparian corridor northward to Alvord Lane.

- **Creek to Creek Trail:** This trail is proposed to provide a link between the McKernan Creek Trail and the Annexation Area stream corridor trails. The route is purely conceptual at this stage and very flexible, but should take advantage of tree groves and upland habitat areas where possible in order to help provide a habitat connection as well as a pedestrian connection.

- **Edge Trail:** This short nature trail is intended to provide connections from local roads in the East Hills to Tenax Woods and the city street system leading to the Westside Trail.

The above-described trail framework has been designed to connect to the River Terrace trail system, specifically the multi-use path along Roy Rogers Road and the River Terrace Trail (formally called the 300-foot trail) within the community.

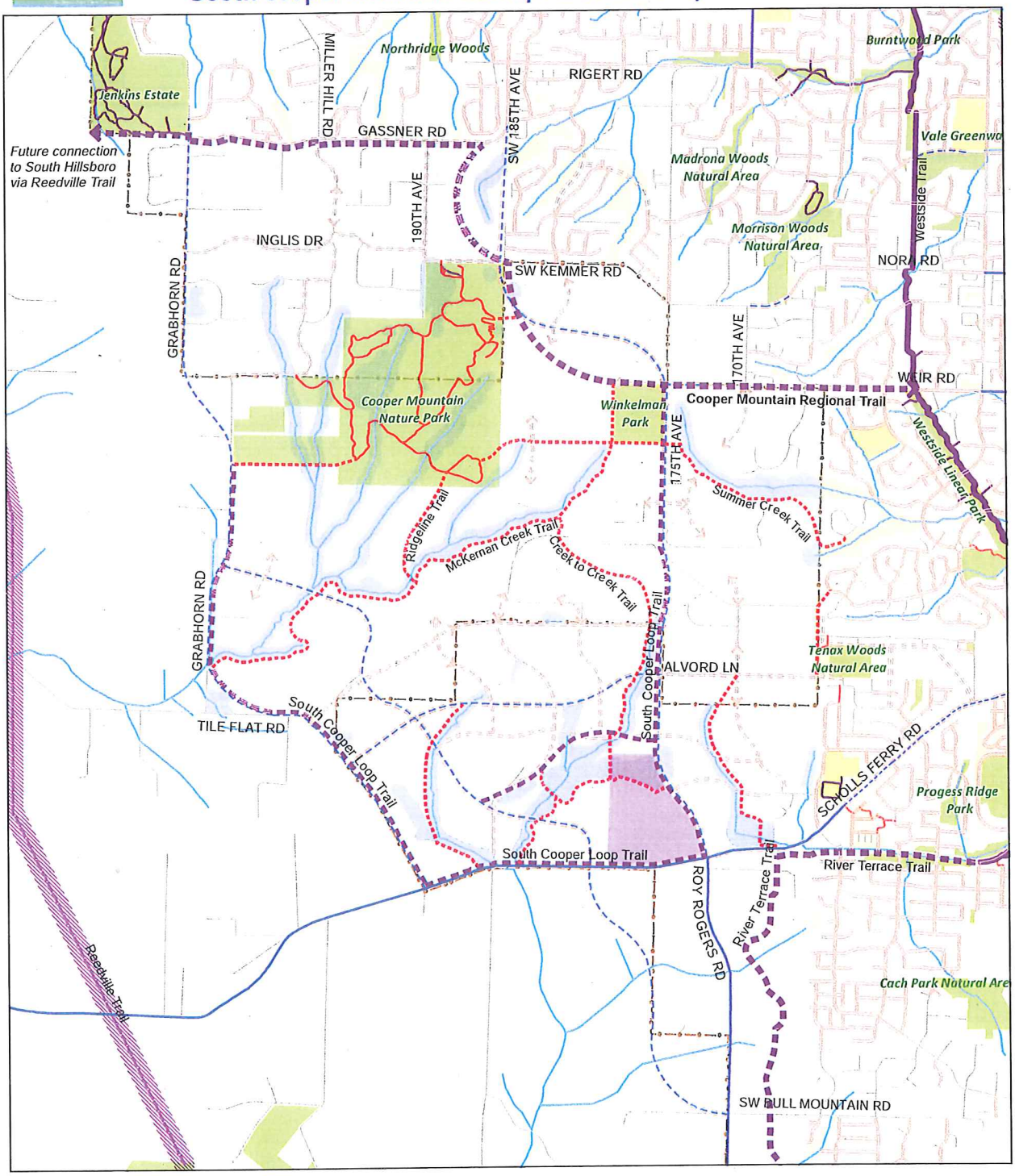
Scenario Differences

The trail differences between the scenarios are minor and primarily respond to the differences in the roadway framework. One implication of the different choices for how to connect from 175th to 185th is whether the Cooper Mountain Regional Trail would run alongside roads for its full length within the planning area (as in Scenario B), or whether it would diverge after crossing

Kemmer Road and run in its own right-of-way (as in Scenario A). The alignment in Scenario A may provide a quieter and potentially more pleasant route through the Hilltop area; however it would require a separate right-of-way acquisition and construction process rather than being built as part of a future roadway project, as is assumed in Scenario B.

Beaverton South Cooper Mountain

South Cooper Mountain Concept & Community Plans



Bicycle & Pedestrian Framework: Scenario A

- Regional Multi-use Trails
- Community Multi-use Trails
- Local Multi-use Trails
- Existing Pedestrian-Only Nature Trails
- Private Paths
- Conceptual Future Trails
- Proposed Regional Multi-Use Path
- Proposed Community Multi-Use Path
- Proposed Nature Trail
- Existing Bike lane
- Existing Sidewalk (Complete)
- Existing Partial Sidewalks
- Planned Sidewalks & Bike Lanes*
- Planned Sidewalks*
- Streets
- Urban Growth Boundary
- Streams
- Riparian & Wetland Buffers
- Planned High School Site
- Existing Parks and Natural Areas
- Preserved by Home Owners Assns.
- Existing Schools

Date: 12/20/2013

** Future arterials, collectors and neighborhood routes in SCM planning area. New local streets (not shown) will have sidewalks.*

Prepared By: Angelo Planning Group

This map is intended for informational purposes only.

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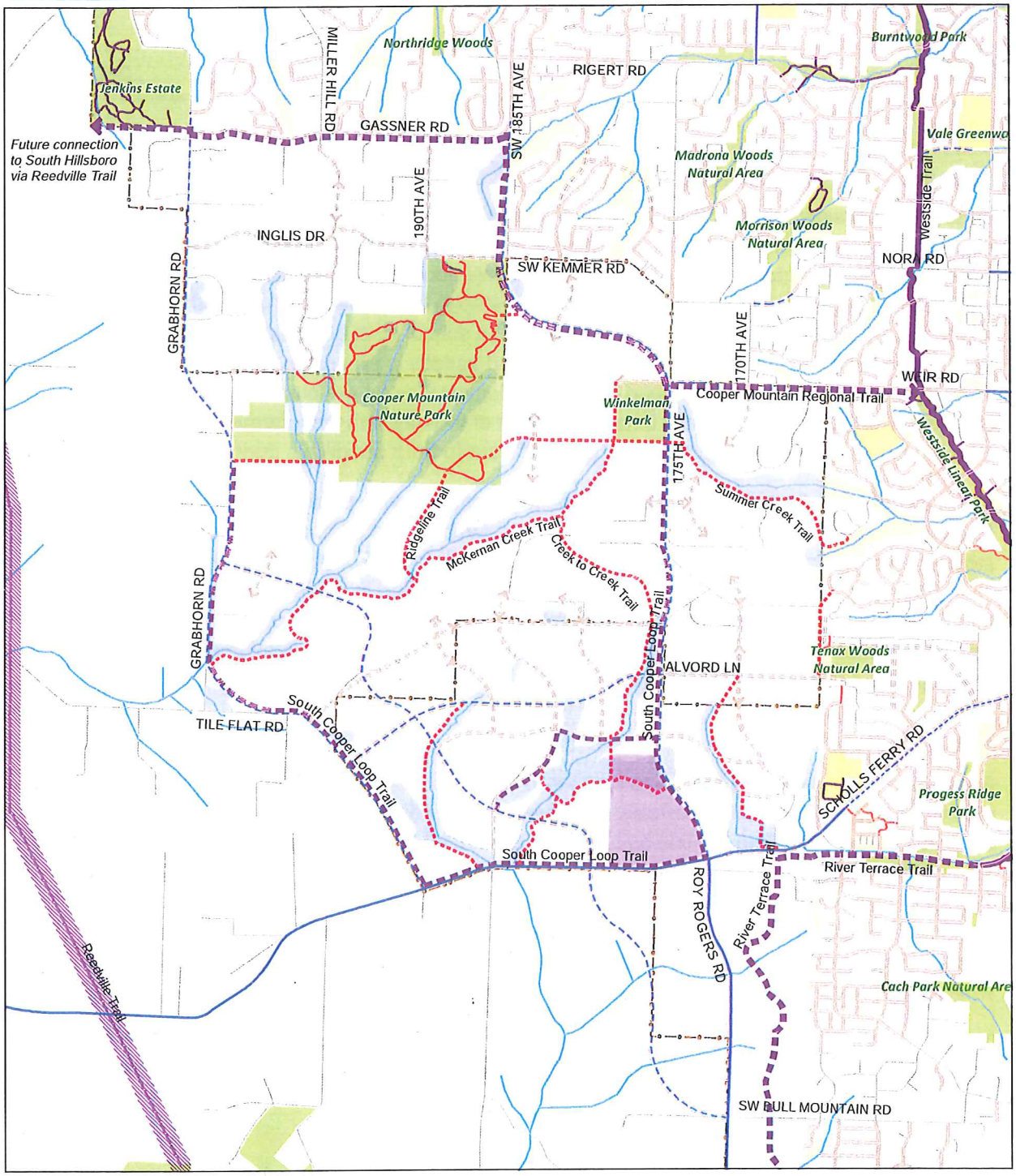
Beaverton South Cooper Mountain

South Cooper Mountain Concept & Community Plans



Bicycle & Pedestrian Framework: Scenario B

- Regional Multi-use Trails
- Community Multi-use Trails
- Local Multi-use Trails
- Existing Pedestrian-Only Nature Trails
- Private Paths
- Conceptual Future Trails
- Proposed Regional Multi-Use Path
- Proposed Community Multi-Use Path
- Proposed Nature Trail
- Existing Bike lane
- Existing Sidewalk (Complete)
- Existing Partial Sidewalks
- Planned Sidewalks & Bike Lanes*
- Planned Sidewalks*
- Streets
- Urban Growth Boundary
- Streams
- Riparian & Wetland Buffers
- Planned High School Site
- Existing Parks and Natural Areas
- Preserved by Home Owners Assns.
- Existing Schools

Date: 12/20/2013

** Future arterials, collectors and neighborhood routes in SCM planning area. New local streets (not shown) will have sidewalks.*

Prepared By: Angelo Planning Group

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Future Transit Framework

Based on discussions with Tri-Met officials and Tri-Met's Westside Service Enhancement Plan, the most likely near-term extension of transit service to the planning area is the extension of bus service from Washington Square to the SCMAA along Scholls Ferry Road. This route will likely include a stop at Progress Ridge as well. A future stop to serve the SCMAA could potentially be located at the planned Beaverton School District high school or at the Main Street, if the necessary facilities, including a bus pullout area and access to amenities for drivers (such as restrooms or shops) are available and if there is a logical way for the bus to turn around. Service would potentially run daily throughout most of the day with fairly frequent service (15 to 20 minute headways) during peak times and half-hour to hour headways during off times.

In the longer-term, limited-stop commuter-oriented transit service could be provided from Sherwood to Hillsboro along Roy Rogers and 175th Avenue through the planning area. Future stops could be located adjacent to higher density nodes along 175th Avenue. Service would likely be limited to peak commute hours, and could be provided in a single direction (north) in the morning and the reverse direction (south) in the evening. This line would likely utilize the connection from 175th to 185th Avenue. Improvements to 175th to eliminate the sharp turn at "the kink" would be required in order to provide bus service on 175th Avenue.

Civic Uses

For both the near-term and the future long term, locations for civic uses such as parks and elementary schools are not specifically identified. The needed amount of land for these uses is set aside through the assumptions built into the residential development types. Guidance for the potential location of parks and schools is provided through the Parks Framework Plan and Schools Framework Plan (please see Figure 9 and Figure 10). The framework plans list location criteria for the siting of parks and schools, and display multiple areas which meet the criteria. This method reflects the priority, expressed by multiple stakeholders, for flexibility for where these uses will be located.

The need for parks and schools has been calculated using planning standards from THPRD, the Beaverton School District, and Hillsboro School District. The needed facilities are summarized below:

South Cooper Mountain Annexation Area

- 1 K-5 or K-8 school within the Beaverton School District area
- 1 K-5 or K-8 school within the Hillsboro School District area

- Roughly 10 acres of land for neighborhood parks[10]

North Cooper Mountain

- Roughly 1 acre of neighborhood park land

Urban Reserve Area

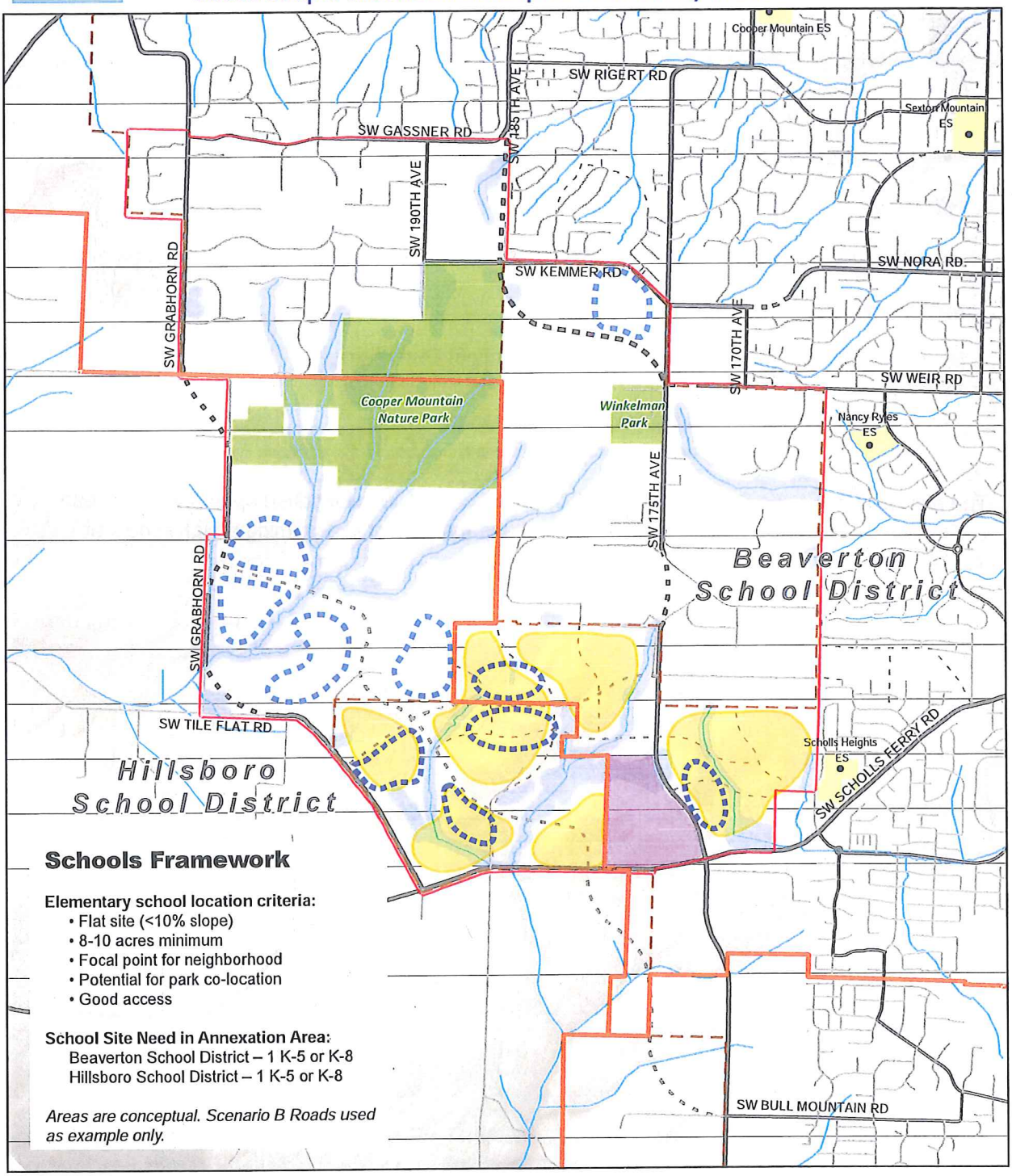
- 1 K-5 or K-8 school within the Beaverton School District area
- 1 K-5 or K-8 school within the Hillsboro School District area
- Roughly 8 acres of land for neighborhood parks
- Roughly 18 acres of land for a community park

The planned Beaverton School District (BSD) High School site is identified specifically because BSD has already taken steps to acquire this site and the project is assuming a high school at this location.

[10] The neighborhood parks standard generates a need for approximately 7 acres of neighborhood parks. The total number of neighborhood park acres needed within the SCMAA has been increased by about 40% to partially compensate for the decision to not site a community park within the Annexation Area.

Beaverton South Cooper Mountain

South Cooper Mountain Concept & Community Plans



Schools Framework

- Existing Schools
- Planned High School Site
- School District Boundary
- Study Area
- Urban Growth Boundary
- Streams
- Riparian & Wetland Buffers
- Existing Study Area Parks
- Arterial
- Collector
- Other
- Proposed Arterial
- Proposed Collector
- Proposed Neighborhood Route
- Conceptual Annexation Area Neighborhoods
- Area Meeting School Location Criteria (Within Annexation Area)*
- Area Meeting School Location Criteria (Outside Annexation Area)*

Date: 12/19/2013

* Area shown is larger than future schools will be.

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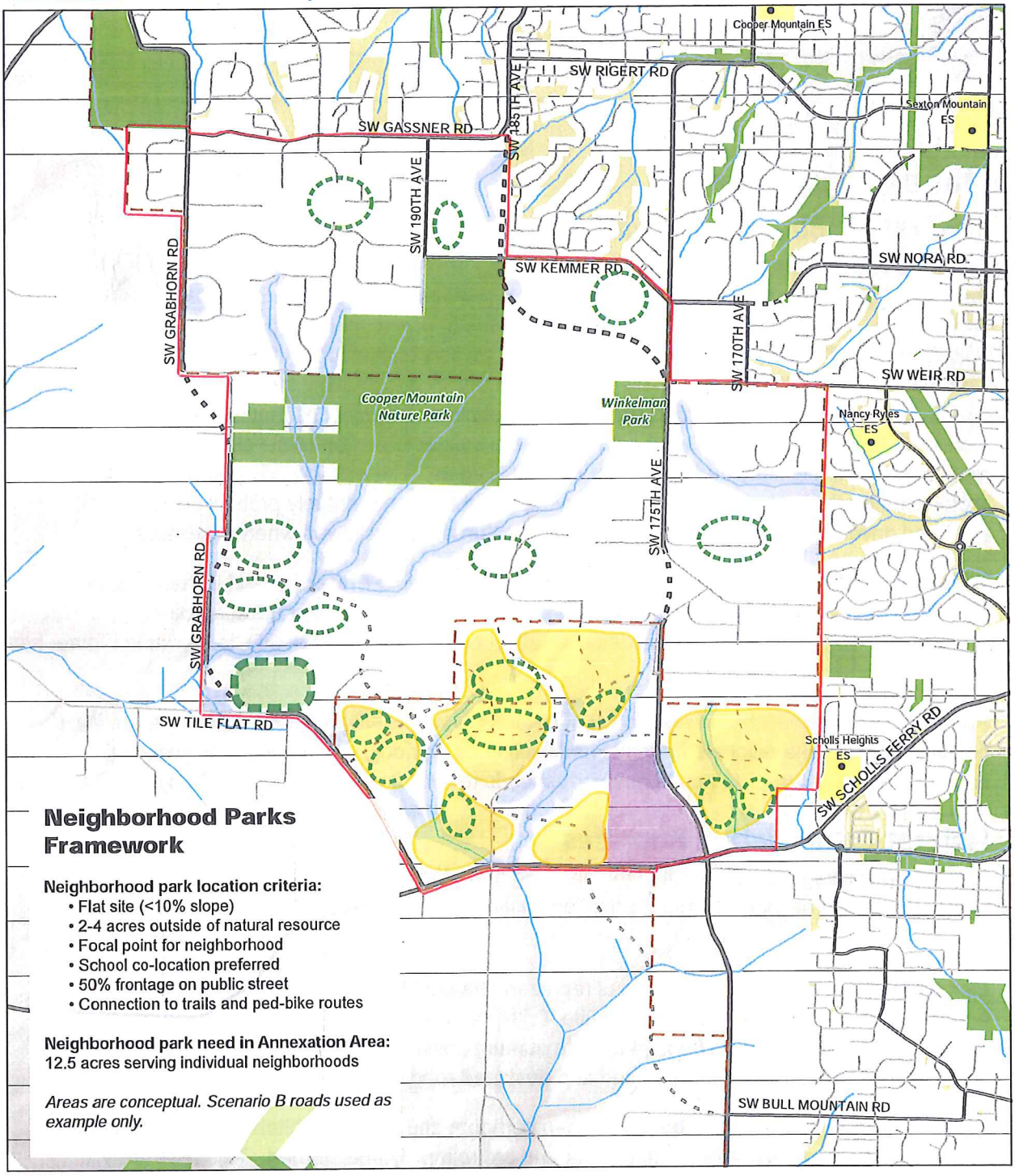
Beaverton South Cooper Mountain

South Cooper Mountain Concept & Community Plans



Neighborhood Parks Framework

Neighborhood park location criteria:

- Flat site (<10% slope)
- 2-4 acres outside of natural resource
- Focal point for neighborhood
- School co-location preferred
- 50% frontage on public street
- Connection to trails and ped-bike routes

Neighborhood park need in Annexation Area:
12.5 acres serving individual neighborhoods

Areas are conceptual. Scenario B roads used as example only.

Parks Framework

- Existing Parks and Natural Areas
- Preserved by Home Owners Associations
- Arterial
- Collector
- Other
- Proposed Arterial
- Proposed Collector
- Study Area
- Urban Growth Boundary
- Streams
- Riparian & Wetland Buffers
- Planned High School Site
- Existing School
- Conceptual Annexation Area Neighborhoods
- Area Meeting Neighborhood Park Location Criteria*
- Potential Community Park Location

Date: 12/19/2013

* Area shown is larger than future parks will be.

Prepared By: Angelo Planning Group
This map is intended for informational purposes only.

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Natural Resources

Natural Resource Framework Plan

A basic premise of the scenarios and of this planning effort is that the natural resources within the planning area are among the most important amenities and should be protected and enhanced as much as possible. Various mechanisms to protect and to encourage enhancement of natural resources will be explored as part of developing the Concept and Community Plans for the area. These may include SNRA designation, tree protection standards, hillside/slope protection standards, development regulations that allow some increased flexibility or development potential on the buildable portion of the site in exchange for protections on the constrained portion, or other strategies. The existing and potential future protections for these resources are not absolute (i.e. they do not entirely prohibit disturbance); road and driveway crossings and some minimal disturbance is allowed when necessary.

For the purpose of the current scenarios, the Natural Resource Protection and Enhancement Priorities map prepared for the initial scenarios is proposed as the Natural Resource Framework. The same map, with updates to reflect comments from THPRD, is shown in Figure 11.

Priorities for conservation and restoration of natural resources within the planning area are listed below, along with the rationale for their identification as a priority and the value provided by each of the resources. The numbering corresponds to the numbers on Figure 11 on page 33.

Habitat Conservation Priorities

Among the existing resources within the planning area, the top priorities for conservation have been categorized as Tier 1 or Tier 2 priorities based on the habitat value they provide.

Tier 1

Tier 1 habitat conservation priority areas represent the best habitats within the planning area and those most important to fish and wildlife. Within areas identified as Tier 1 conservation priorities, disturbance should be kept to the minimum possible, with little or no additional development allowed and carefully sited and designed road crossings.

1. This area contains high quality riparian corridors and upland habitats that are connected to the Cooper Mountain Nature Park and are relatively undisturbed. This area likely contains native Oak habitat similar to that found within the Nature Park, which is important for native species.

2. This area contains a diversity of native habitats, including wetland, riparian, and upland habitat. It contains the most intact stream within the SCM Annexation Area; human disturbance throughout this resource area appears to be relatively minimal, with the exception of an existing dam (removal of which should be evaluated for feasibility and

environmental impacts). The area is home to a diverse mix of vegetation and frequented by migratory birds.

3. This wetland area covers roughly 4.5 acres, and is contiguous with wetlands on the Churchill Woods subdivision property that have been protected as part of the subdivision approval. This wetland provides diverse wildlife habitat, and meets criteria for designation as a locally significant wetland.

4. This stream and riparian corridor is in a steep, forested ravine with limited development potential. It also provides a link to the Summer Creek stream shed and the protected stream corridors to the east. Further study is needed to determine resource priorities and options relative to the planned 175th-185th arterial connection.

5. This location represents the headwaters of a stream that drains into Washington County's Johnson Creek and, like conservation area #5, provides a connection between two stream sheds. This area includes an existing patch of trees and upland habitat that provides a wildlife connection between the Nature Park and the creek. New road alignments that cross this resource should take special precautions in design to ensure safe wildlife passage.

Tier 2

Tier 2 habitat conservation priority areas may have a greater level of human disturbance or play a less crucial role in wildlife movement than Tier 1 areas, but they include valuable upland and/or riparian habitats that provide important ecosystem services. Some limited degree of disturbance should be allowed, but the fundamental habitat value and ecosystem services should not be lost or excessively compromised.

6. This stream and riparian corridor is in a steep, forested ravine with limited development potential. It also provides a link to the Summer Creek stream shed and the protected stream corridors to the east.

7. There is some human disturbance in this area, with less tree cover and areas that have been farmed or cleared; however, it is contiguous with the Tier 1 habitat area identified as #1 and connects to the Cooper Mountain Nature Park. The primary value in protecting this area is to prevent impacts on the Nature Park and on habitat area #1.

8. This area includes a mix of natural forested areas, planted wood lots (e.g. christmas tree farm), and very low density housing. Its primary value is in providing upland forest habitat connected to habitat area #1 and to Winkelman Park.

9. This area contains moderate quality upland habitat that provides tree cover connecting from habitat area #1 to drainages and protected corridors to the east.

10. This area provides moderate to high quality upland forest habitat adjacent to the Cooper Mountain Nature Park.

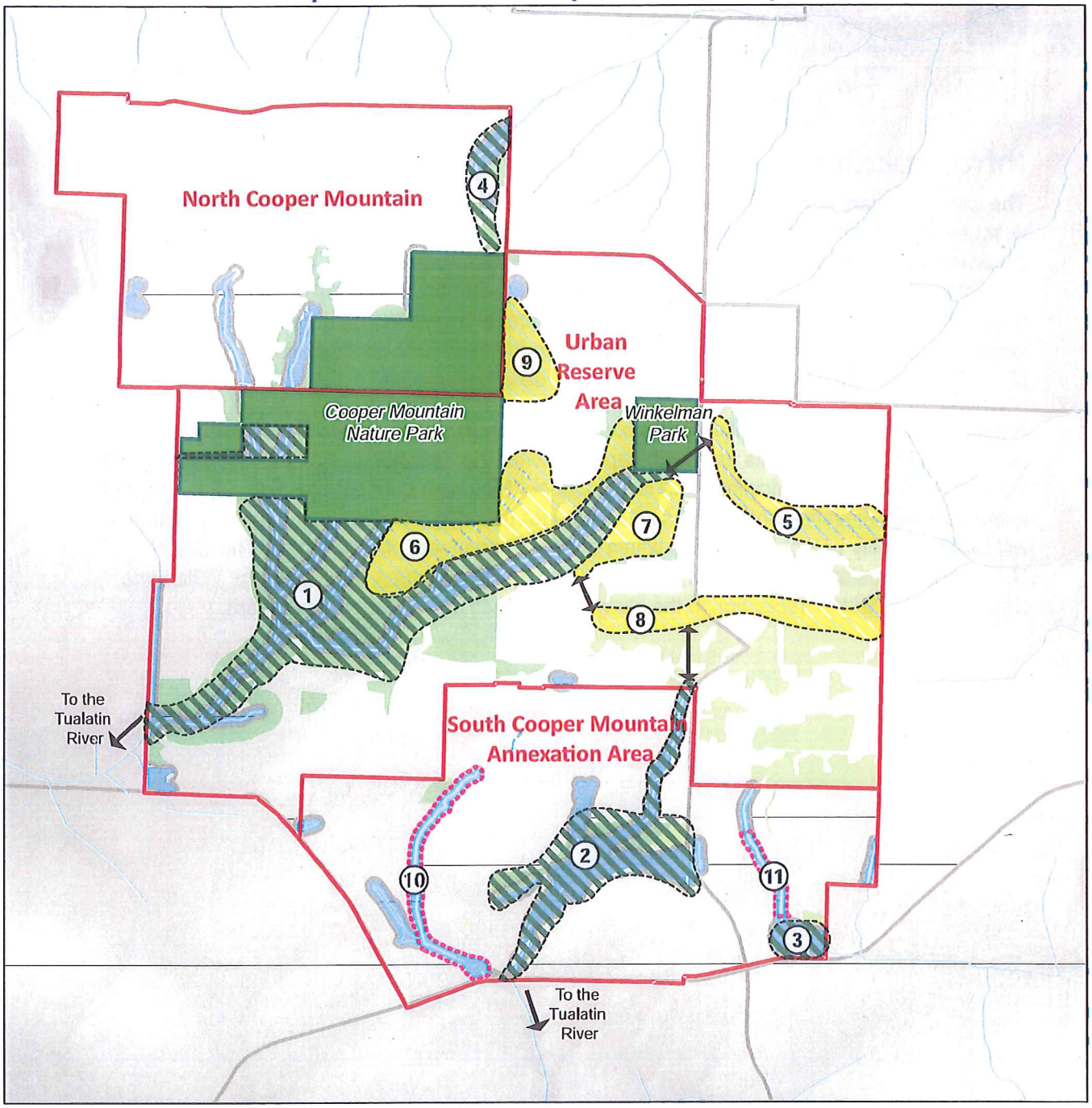
Priority Habitat Connections

The areas identified with arrows on Figure 11 represent key links between stream corridors and priority habitat conservation areas. While these connections are not intended to preclude development, policies and standards may be crafted to ensure that safe wildlife passage remains possible. Based on reports from area residents, wildlife currently pass through many of the yards in partially developed areas such as NCM and the East Hills. As future development reduces the opportunities for wildlife passage, these connection points will become more important.

Habitat Restoration Priorities

The areas identified as #10 and #11 on Figure 11 represent stream channels that have been impacted and degraded by agricultural activities over time. Because they are central to the South Cooper Mountain Annexation Area, they are important to improve to a state where they can be both ecologically healthy and attractive neighborhood amenities. Within areas identified as restoration priorities, stream restoration may be paired with trail construction and stormwater management facilities to achieve multiple benefits.

South Cooper Mountain Concept & Community Plans



Natural Resources Framework

Legend

- Riparian Habitat & Wetland
- CWS Vegetated Corridor
- Class A Upland Habitat
- Class B Upland Habitat
- Highest Preservation Priority
- Secondary Preservation Priority
- Stream Enhancement Priority
- Priority Wildlife Connection
- SCM Planning Area
- Planning Area Parks
- Streams
- Arterials

Date: 12/19/2013

Prepared By: Angelo Planning Group, David Evans and Associates, Inc.

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Infrastructure

The water, sanitary sewer, and storm water systems to serve South Cooper Mountain were described and evaluated during the scenario evaluation. The water, sanitary sewer and storm water management evaluations are available on the project web site.[11] For the purpose of the current scenarios, there is little material difference between the scenarios regarding the approach and backbone systems for water, sewer and storm water management. Cost does vary between the initial scenarios, but this is due to different road configurations. Each system plan will be updated when a preferred scenario is selected/created.

A parallel planning process called the Willamette Supply Project is currently underway to evaluate potential alignments for a high capacity water transmission line and locations for water storage reservoirs in the vicinity of the South Cooper Mountain concept planning area. Location criteria such as elevation and parcel size needed for these facilities are being developed that will help to identify potential locations within or near the concept planning area. The City of Hillsboro and Tualatin Valley Water District are the principal parties involved in the Willamette Supply Project, with participation in the study by the cities of Beaverton and Tigard.

[11] Please see www.beavertonoregon.gov/southcooperplan.